stern of a vessel. The former is the case generally observed at Helena and other famous foehn stations in Montana; the latter case is that of Green Mountain and of Table Bay when south and southwest winds blow over Table Mountain and the Lion's Rump.

Undoubtedly, the same phenomenon must be observed in every similar combination of conditions the world over, and precisely these were present on the date quoted by La Pérouse in whose case, as the center of low pressure passed over him, the easterly winds veered quickly to the south and then to the west and north, and descended upon him from the mountains a few miles to the northwest.

BAROMETRIC TIDES.

Passing by the many observations on storms and fogs contained in the second volume of the English edition, we come to the last article in the appendix describing observations made to discover the flux and reflux of the atmosphere. This article by Mr. de Lamanon is dated from St. Catherines, November 5, 1785, and embodies observations made hourly from September 28 to October 1, when the vessel was sailing in a southwesterly course, between latitude 1° 5′ N. and 1° 34′ S., and therefore near the equator. Observations of this character had been recommended by the Academy as being most likely to reveal the slight tidal influence that the moon might exert on the earth's atmosphere. De Lamanon found that the tide at the equator amounted to a variation in the barometric pressure of about 0.12 English inch, which is equivalent to a rise and fall of about 100 feet. This result was sufficient to show the extreme delicacy of the problem, which has, since then, been so abundantly investigated, but still remains one of the mysteries of meteorology.

The following are the exact words of De Lamanon's report:

THE FLUX AND REFLUX OF THE ATMOSPHERE.

By G. DE LAMANON (from La Pérouse, Vol. II, p. 521).

Having been present at the reading of this article [the Instructions—ED.] in an extraordinary sitting of the Academy, I caused an excellent barometer to be constructed by the Sieur Fortin, so as to show a variation of $\frac{1}{50}$ of a line. This ingenious artist was recommended to me by M. Lavoisier. It was supposed I should make use of this instrument, constructed for the above purpose, and it was for this reason the Academy, in its instructions, recommends that the observations should be made on shore; but having procured at Brest a marine barometer, made by Nairne, and described in the voyage of the celebrated Cook, I found that it was perfectly calculated for making exact observations even at sea. However great may have been the rolling of the vessel, the mercury has hitherto remained immovable, owing to the excellent suspension of the barometer and to the capillary tube, which is fitted to the common tube, and by the help of the nonius, which is added to it, variations so small as $\frac{1}{10}$ of a line may be readily perceived.

By observing this barometer daily, at sunrise, at noon, and at sunset, I remarked that, from the latitude of 11° 2′ north to that of 1° 17′ north, its movement was extremely regular. It was always at its maximum of elevation about noon, when it descended till the evening, and rose during the night.

We reached the latitude of 1° 17′ north on the 27th of September, and on the 28th, before daybreak, I began a series of observations, for which I had made preparations the evening before, and I continued them every hour till the 1st of October, at 6 o'clock in the morning; that is, for a period of upwards of three days and three nights. During the six hours that I devoted to sleep, M. Monge was so good as to supply my place. I thought it necessary at the same time to observe the thermometer in the open air as well as that attached to the barometer, and the hair hygrometer. I marked down, also, in separate columns, the direction of the wind, the course of the ship, and the rate of our sailing, estimated by the log, and embraced the same opportunity of observing the temperature of the sea and the dip of the needle.

The results of these observations appear to me to be extremely curious. The barometer gradually ascended for six hours, and then descended during the next six, and continued thus alternately rising and falling, as may be seen by the following table, extracted from my journal. [The table is omitted.—ED.]

The flux and reflux of the air at the equator is accordingly so great as to cause a variation in the barometer of about one line and $\frac{2}{10}$ of the English division, which supposes a rise and fall in the atmosphere of about a hundred feet; while the combined action of the sun and moon, according to M. Bernoulli, causes an elevation in the sea at the equator of only seven feet.

It is true, there are corrections to be made, first, for the difference in the temperature of the mercury in the barometer; secondly, for the difference that may exist in the temperature of the air; and lastly, for the seven feet rise and fall of the sea, on which I was placed when making observations.

I must leave it, however, to more able philosophers than myself to determine whether or not this be agreeable to theory and calculation. But, be it as it may, it is evident from the observations, that meteorologists allow far too much to the action of the moon, as I hinted in my observations on the fog of 1783, printed in the Journal de Physique, and which M. de la Place, author of La Cosmographie Elementaire, has mathematically demonstrated. It would, nevertheless, be equally erroneous to count as nothing the action of the moon; since by causing a variation of one line and $\frac{3}{10}$ in the barometer, it may influence the atmosphere and occasion sensible alterations.

As I think it my duty to lay my observations before the Academy in the state in which they were made, I here subjoin them. It should be remembered, however, that the change of level in the reservoir of the barometer requires a line to be added to the different heights of the mercury marked in the table. [Table omitted.—ED.]

NOTES FROM THE VOYAGE OF LANGSDORFF.

Mr. O. J. Klotz also furnishes the following note:

A singular phenomenon is noted by Langsdorff in his Voyage and Travels, 1803–1807, Part II, p. 219, latitude 39° 49′, longitude 133°: "The current of the wind at different heights in the air was very disproportionate; the sea was perfectly calm and almost as smooth as glass, and the lower sails hung totally loose while the upper were so filled with wind that by means of them alone we ran at the rate of 6 miles an hour."

NOTES FROM THE SEPTEMBER REPORTS OF THE CLIMATE AND CROP SECTIONS.[1]

ARIZONA.

The weather was remarkably cloudless during the month. Mr. Leopold Walloth reports that a deep thundering noise was heard between noon and 1 p. m, September 12, proceeding from the Granite Range, between his station (Yarnell) and Prescott, both of which are in Yavapai County. He adds that from all accounts a large meteor struck the earth at this time.

It is often difficult to distinguish between the noise and concussion due to an earthquake and that due to a meteor rushing through the atmosphere, and as both of these occur frequently, either one is a plausible hypothesis in connection with the Arizona phenomenon. But it is entirely improbable—as for that matter, impossible—that the noise heard at Yarnell could have been due to the striking of a meteor against the ground in the neighborhood of the Granite Range. Whenever, as has happened in a few cases, any one has actually been near enough to observe a meteoric stone fall to the ground, a noise has, indeed, been heard proceeding from the air as the meteor rushes through it, but nothing remarkable has been recorded relative to the noise made when the meteor actually strikes the ground. In fact, a cannon ball roaring through the air over one's head, makes very little noise when it finally buries itself in the earth. The noise heard at Yarnell could easily have been produced by a meteor rushing through the air, but not by one when it struck the ground. It occurs to us, however, to remark that these deep thundering noises in hilly and mountainous countries, are sometimes produced by landslides on the surface and sometimes by the cracking apart of great masses of rock long before the visible landslide occurs. In the interest of science it is desirable that such noises should be traced back to their true origin and cause; one should not be satisfied with the popular idea that, *perhaps*, a large meteor struck the earth, for this latter is among the rarest of observed phenomena.

We are pleased to note that the Agricultural Association of

[1] These were prepared for the September REVIEW but were necessarily postponed.